

***Allied Waste, Inc.***  
***Regional Council of Rural Counties***  
***SCS Engineers***  
***Waste Management***

January 31, 2006

Dr. Alan Lloyd, PhD., Secretary  
California Environmental Protection Agency  
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P.O. Box  
Sacramento, CA 95826

SUBJECT: COMMENTS ON CLIMATE ACTION TEAM DRAFT REPORT TO THE  
GOVERNOR AND LEGISLATURE

Dear Dr. Lloyd:

We are writing to you regarding the California Climate Action Team's (CCAT's) Draft Report to Governor Schwarzenegger and the Legislature on Greenhouse Gas Emissions (herein referred to as Draft Report). Allied Waste and Waste Management are the largest providers of comprehensive solid waste management and recycling services in California. The Regional Council of Rural Counties (RCRC), on the other hand, represents 30 of our state's rural counties who own and/or operate their own landfills. Altogether the counties represented by RCRC generate less than 3% of the state's solid waste stream – and an insignificant amount of greenhouse gas emissions. Finally, SCS Engineers provides comprehensive consulting services to the solid waste industry – including the control of greenhouse gas emissions from landfills in California.

Although we do not necessarily agree on all of the CCAT's conclusions and recommendations in the Draft Report to Governor Schwarzenegger, we believe the Draft Report is appropriately constructive and focused on ways to maximize economic and environmental benefits to California through strategies for reducing greenhouse gas emissions (GHG). We strongly support the emphasis on the need for more renewable energy along with the infrastructure and market incentives necessary to make this and other sustainable energy investments possible.

Our area of major concern is the Draft Report's assumptions regarding GHG emissions from landfills. Even though the report acknowledges that landfills may emit approximately 2% of total GHG emissions in California, the report places landfills in the category of "largest GHG sources" and potentially subjects landfills to mandatory emissions reporting, potential cap on emissions and other limitations as suggested by the Draft Report. This inclusion fails to recognize:

1. The days of "dumping" waste into a pit where it decomposes with no hope of controlling the release of methane are long gone. Today's landfills are responsible

for less than 2 percent of GHG emissions. And although the nation's GHG emissions have risen by about 13 percent since 1990, landfill emissions have dropped by 40 percent during the same timeframe because of technical innovations. A number of GHG protocols (CCX, RGGI, Kyoto) recognize this and have not identified and regulated landfills as a significant source of methane, but instead view landfills as sources of real, surplus and verifiable GHG emissions reductions. Attached to this letter is a recent letter that Waste Management sent to the US Department of Energy (DOE) highlighting their recommendations for the treatment of landfill methane and carbon in DOE's voluntary reporting program. The letter points out that the environmental and human health protections afforded by landfills are important in distinguishing landfills from other potential sources of GHG emissions. Like DOE, California should not set up a GHG program that essentially penalizes the management of waste in a system that was designed to mitigate human health and environmental impacts. California's program should also recognize that landfills sequester large amounts of carbon over long periods of time. It is these factors that have led other international and domestic GHG programs to view landfills as de minimis or zero emitters of greenhouse gases.

2. As repeatedly acknowledged to us by members of CCAT and support staff, fugitive landfill gas emissions are highly variable and uncertain. The landfill emission numbers presented in the draft report are apparently derived from the California Energy Commission's (CEC) statewide GHG emission inventory for 2002, published in 2005. The 2002 data for landfills obtained from local air districts appears to be derived from the assumption that landfills only capture 75% of landfill gas they generate. This, in turn, appears to be derived from US EPA nationwide default assumptions that are not based upon recent research and are not California specific. To the contrary, based on measurements of surface landfill gas emissions that we conduct regularly at our modern landfills in California, we believe very little landfill gas is emitted fugitively -- provided the landfill has a well designed and operated gas control system. We believe that recent and continuing studies will bear this out. Other than some fine tuning "around the edges" -- there is very little more that can be done to control GHG emissions from most existing *modern* landfills.
3. The Draft Report does not appear to recognize the significant contribution that landfills make to the long-term sequestration of carbon -- thereby preventing GHG emissions that would otherwise occur. Indeed, the 2005 CEC report cites the landfill carbon sequestration from "lumber" alone at 3.88 million metric tons CO<sub>2</sub> equivalent (MMT CO<sub>2</sub>E). We believe that total carbon sequestration in landfills, considering all disposed materials, is far higher than the 3.88 MMT CO<sub>2</sub>E cited in the 2005 CEC report for 2002 emissions. As we further discuss in the attached letter to DOE, we believe that the total sequestration of carbon in landfills from all sources of disposed waste to be far higher and even exceed any GHG emission-producing potential at landfills.

4. The Energy Commission and the Integrated Waste Management Board recognize the lack of quality and representative data and are considering a 3-year project to develop better tools and assumptions regarding potential GHG emissions from landfills – using the services of widely recognized experts on landfill gas emissions. For example, there is scientific evidence that significant methane oxidation occurs in the soil cover and caps of existing landfills – including evidence that landfill covers on landfills with an effective gas control system may incrementally oxidize greenhouse gases that occur from other sources as surrounding air is exposed to the landfill cover by the landfill gas collection system. Such emission control and prevention due to landfill cover material has not been accounted for in the Draft Report.

Attached to this letter is a more detailed review of specific issues we have identified with the Draft Report. We urge you to seriously consider and address these concerns, as well as those mentioned in this letter, prior to finalization of the report.

#### **Mandatory Reporting**

The above problems give us concern about one of the main recommendations of the report – that major sources of GHG emissions, including landfills, should be included in mandatory GHG reporting strategies and potentially subject to mandatory caps on emissions. This is problematic for the solid waste industry in that there are no current protocols for accurately estimating potential fugitive greenhouse gas emissions from landfills – only the suspect default assumptions that most current emission estimates are based upon. Landfills are unlike other point source “major emitters” that are identified in the report – electric power, oil refining, oil and gas production and the cement industry – for which direct measurement and mass balance estimates are much more accurate. Fugitive landfill emissions are extremely difficult to measure, hence why they are called “fugitive” and current estimates are based mostly on modeling and speculation rather than hard data.

We believe the pending 3-year study contemplated by the CEC and the Waste Board will go a long way to answering many of these questions and lead the way toward establishing more reliable emission estimating protocols for California landfills.

#### **Recommendations**

Rather than including landfills in the category of “largest stationary sources” at the outset we would suggest that landfills be placed in a “temporary holding category” to be further evaluated once the pending 3-year study is completed and we have a better handle on fugitive landfill GHG emissions. We are not suggesting that landfills be let “off the hook” entirely – only that we not be subject to mandatory reporting when the procedures and protocols for such reporting are not developed, understood and accepted – and there is no clear understanding of the GHGs being emitted from the landfills.

We are not trying to avoid responsibility for GHGs. We have been actively engaged in the development of effective GHG reduction strategies for many years. We sincerely hope to be involved and actively participate in the Energy Commission and Waste

Board's pending study of landfill greenhouse gas emissions. At the end of this project, we expect that you will find that modern landfills are far less of a source of GHG emissions than is currently assumed in the draft report.

In the meantime, we hope that California will recognize the positive renewable energy contributions that landfills can make towards meeting California's energy needs. Many waste industry stakeholders, including Allied Waste and Waste Management, are looking to expand many of our landfill gas to energy projects – including the conversion of landfill gas to LNG fuels to power our own vehicles and the vehicles of others. Waste Management and others also operate biomass-to-energy facilities that provide an additional source of green renewable energy. We hope that the final report will identify obstacles that can be removed to encourage the development of incentive programs to expand the safe conversion of solid waste *and* landfill gas to useful energy.

We look forward to further collaborative efforts with the CCAT and California's legislature and regulatory bodies as we focus more intently on reducing our state's GHG emissions and developing alternative renewable sources of energy – such as landfill gas and other waste-to-energy projects.

Sincerely,

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Attachment: A. Letter Dated November 30, 2005 from Waste Management to U.S.  
DOE Regarding Treatment of Landfill Methane & CO<sub>2</sub>  
B. Detailed Comments on Climate Action Team Draft Report to the  
Governor and Legislature

cc: Anne Baker, Deputy Secretary, Cal/EPA  
Rosario Marin, Chair, and Members, CIWMB  
B.B. Blevins, Executive Director, California Energy Commission  
Eileen Tutt, California Climate Action Team, Cal/EPA  
Mark Leary, Executive Director, CIWMB  
Susan Brown, California Energy Commission  
Judith Friedman, CIWMB  
Diane Wittenberg, President, California Climate Action Registry

## Attachment B

### ***DETAILED COMMENTS ON CLIMATE ACTION TEAMS DRAFT REPORT TO THE GOVERNOR AND LEGISLATURE***

#### **Landfill GHG Emissions**

The major greenhouse gas (GHG) emission issues that are not fully discussed or in some cases even mentioned in the Draft Report include the following:

- The inventory that was used to calculate the current amount of GHG emissions attributed to landfills is inaccurate and does not adequately represent the existing landfill emissions. This has allowed landfills to be placed in the “largest GHG sources” category and has resulted in the proposed goal of 3 million metric tons of GHG reductions from additional methane capture at landfills (Page 53 of Report). These data were derived from a California Energy Commission (CEC) study of GHG emissions, which relies upon inventories developed by U.S. EPA and others. These are the same inventories that have overestimated landfill gas (LFG) generation and the amount of LFG actually emitted by: (1) utilizing landfill model input parameters that too high particularly for drier climate states like California, (2) assuming a collection efficiency of 75% for sites with LFG recovery systems, and (3) assuming all uncollected LFG is emitted. Conclusions should not be drawn about California landfill gas emissions until more work is done with respect to confirming GHG emissions from California landfills or similar dry climates. Recognition must be given to the emerging evidence that significant amounts of landfill gas is oxidized in landfill cover materials which may also contribute to reduction of GHGs from surrounding sources.
- Accurate methodologies do not currently exist to estimate the amount of methane and other GHGs being emitted from landfills. The industry has just begun working with the CEC and the California Integrated Waste Management Board (CIWMB) to come up with a methodology to better assess GHG emissions from landfills. This project needs to be completed before the source category can be accurately assessed using a methodology developed and agreed upon by California regulatory agencies and the solid waste industry.
- All of the GHG emissions from landfills are attributed to the landfill source category rather than recognizing landfills as a management facility that accepts carbon loading from waste generators, fixes a large quantity of that carbon in place, controls a large percentage of the GHG emissions by recovering LFG, and emits a very small percentage of the carbon that is accepted as GHG emissions. *Recognition should be given to the tremendous reduction in GHG emissions from landfills over the past 50 years – more so than from any other industrial sector.*
- The ability of landfills to sequester carbon from the environment, that might otherwise result in GHG emissions if not disposed, is not included in the assessment of landfill emissions.

- The Draft Report assumes that all landfill gas that is not collected (or for which collection cannot be documented) is emitted to the atmosphere, which does not take into account the effects of methane oxidation in the landfill cover.

### **Specific Issues from Report**

***GHG Reduction in Landfill Cover.*** On Page 61 of the Report, it is stated that uncollected methane in the LFG "...is emitted when it migrates through the landfill cover and becomes a potent climate change emission." The Report, unfortunately, fails to discuss the oxidation of methane in the landfill cover as an additional means of greenhouse gas reduction from landfills. The CIWMB staff and Energy Commission staff are aware of a significant number of published studies that suggest significant greenhouse gas reduction due to landfill cap and cover oxidation.

***Basis for and Extent of Existing Landfill Gas Collection.*** Also on Page 61, the Report discusses "Landfill Methane Capture" and makes a broad statement that the technical applicability of any mitigation option is dependent upon the amount of LFG generated by landfills in a given size category." This seems to suggest that the only reason LFG recovery occurs is when it is technically feasible and that it is done at the discretion of the landfill owner/operator. It completely fails to mention the primary driver for the installation of LFG recovery systems is regulatory in nature and that technical applicability is many times not even a consideration. A more accurate representation as to why landfills employ landfill gas recovery systems and the fact that the majority of the large landfills in California already have LFG systems is needed. Landfills are subject to stringent regulatory standards – more so in California than anywhere else. Virtually all major landfills in California are required to have comprehensive gas collection systems by the various California Air Districts – to a far greater degree than is mandated by federal law.

***GHG Reductions from Recycling.*** Again on Page 61, the Report, under the category of "Zero Waste-High Recycling" makes a statement that "efforts to exceed the 50% [diversion] goal would allow for additional reductions in climate change emissions." While Waste Management and Allied Waste strongly support recycling programs, this conclusion is unfortunately drawn without any data to support the contention that waste diversion reduces GHG emissions. We believe that many types of recycling can make significant contribution to reduced greenhouse gas emissions. We are aware of some studies that document reduced energy consumption due to the use of recycled materials as compared to virgin materials – and thus likely to contribute to reduced greenhouse gas reductions. However, we are not aware of comprehensive lifecycle studies of greenhouse gas emission savings that support the numbers suggested in the Draft Report. Certainly no citations are provided by the Draft Report. The Draft Report would be far more credible if sources of information pertaining to expected GHG reductions from recycling were clearly provided.

While it might be said that reducing waste volumes to landfills would, in turn, reduce GHG emissions from landfills (although this is also subject to dispute of the full effect of carbon sequestration is recognized), there is no documentation provided in the Draft Report to show that diverting the material somewhere else (e.g., some form of recycling)

actually reduces GHG emissions – although this is likely true in many instances (e.g., recycling aluminum). The amount of possible GHG reductions from waste diversion cannot be estimated until the GHG emissions that occur from the act of recycling the materials, including collection, transportation, and processing related emissions, are calculated. The CIWMB is asserting that 3 million metric tons of GHG reductions have been achieved from the current 50% diversion (Page 20) and an additional 3 million from the proposed zero waste initiative in the Report (Page 53). Although these numbers may be accurate, we strongly recommend that the final report provide documentation and referenced sources for such assertions made about greenhouse gas reductions due to recycling.

***Landfills are NOT a Significant Source of GHGs.*** On Page 77, the Report recommends the use of a cap and trade system for reducing GHG emissions and suggests that the cap should cover 5 key industries that comprise 30% of the emissions, including landfills. On Page 78, it is suggested that landfills represent 2% of the state's climate change emissions. This recommendation, along with a mandatory reporting program, is further detailed on Page 103. With the comments above on the origin these emission estimates for landfills, there is significant uncertainty whether landfills actually represent that high a percentage of the state's GHG emissions (i.e., do landfills truly belong in the “key industry” category?). If the estimates of potential GHG reduction from landfills are not accurate, the targeted GHG reduction goals may not be attainable. Landfills are simply not a good candidate for a cap and trade program.

### **Specific Issues from Cap and Trade Report**

On Page 10 of the Cap and Trade Report, landfills are listed as having 10.1 million metric tons of GHG emissions, representing 2.1% of the statewide total. In addition, landfills are listed as “somewhat suitable” for a cap and trade program. This discussion is further detailed on Page 26 where it is explained that landfills are a good candidate because there are relatively few major landfills (less than 100) that would need to be controlled and that methane recovery is an easy method for reducing GHG emissions. This conclusion fails to note that most of these major landfills are already controlling LFG to the degree possible, which has been confirmed by the CIWMB in their recent inventory of landfills with LFG systems (i.e., 51 of the 51 largest sites with greater than 5 million tons of refuse, representing 76% of the waste in place, have LFG recovery systems).

On Page 26, the Cap and Trade Report also spells out 3 issues that need to be addressed:

- Carbon sequestration and whether it should be considered in the GHG inventory for landfills.
- Energy recovery from LFG and whether landfills should get credit for the GHG reductions from the displaced utility-derived emissions.
- Facility boundaries and whether they should include the hauling operations associated with the landfills.

The report does not draw any conclusions on these issues or make any recommendations regarding these issues. But certainly before a final conclusion is made about including landfills as a “key industry” subject to a cap and trade system these issues must be clearly

addressed. The California solid waste industry strongly believes credit for carbon sequestration and energy recovery is entirely appropriate (and have been getting it elsewhere in other GHG programs). Further, we do not believe it is appropriate (or possible) to associate vehicle emissions from hauling truck fleets with the landfills since the landfills do not control all of the hauling that occurs at the landfills. These should be included in the broader mobile source category that is being evaluated – or at least a broader category encompassing the entire solid waste industry – not just landfills.

One interesting element of the Cap and Trade Report is that the wastewater treatment category is deemed “not very suitable” for cap and trade because of difficulty in quantification and other issues that we believe to be very similar to landfills (i.e., biological processes for emissions, managing wastes generated by the general population, essential public service, public health issue if not managed properly, etc.).

Also for livestock, manure management, enteric fermentation, soil cultivation, and fertilizer application, emissions are deemed to difficult to quantify from these biological sources for a cap and trade system, however, the same is not said about landfills as a similar biological source of potential fugitive emissions that are also difficult to quantify.

### **Specific Issues from State Agency Workplans**

There are 2 workplans being developed by the CIWMB that affect landfills: (1) zero waste/high recycling (Page 81) and (2) landfill methane capture (Page 77). We would have the same comments as noted above on these workplans.

The CIWMB’s work plan for methane capture has 10 steps for implementation and is actually a very reasonable plan for looking at landfills emissions. The one flaw in it is that it is slated to potentially come *after* the decision to place landfills in the high emitter category, require significant additional reductions in landfill GHG emissions, and include landfills in a cap and trade program. In reality, this work should come first before any of these major decisions and conclusions can be accurately and fairly made. Instead, the program is only being proposed as a means to measure future reductions not to determine whether and how the landfill category should be looked at in the first place.

The work plan for the zero waste/high recycling strategies seems to rely on the base assumption that additional recovery of recyclable materials from the waste stream (beyond 50%) will result in GHG reductions because of reduced methane emissions from landfills and reduced GHG emissions from the extraction of raw materials and production of non-recyclable products. While this may end up being true, there needs to be more data to support this contention, so that the real GHG cost/benefit can be weighed between the additional energy and resources (and resulting GHG emissions) that will occur to recover and recycle the materials and manufacture and bring the recycled product to market versus the methane emissions from that waste if landfilled (most likely in an already controlled landfill) and the creation of the same product from raw materials. Such data may change the outlook on this proposed strategy. At a minimum this data should be included in the report to substantiate any conclusions.